



Access & Excellence

**MONTANA STATE UNIVERSITY-BILLINGS
 BACHELOR OF SCIENCE IN BIOLOGY
 TEACHING CERTIFICATE OPTION
 GENERAL BULLETIN 2003-2005**

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Name _____

Student ID # _____

GENERAL EDUCATION REQUIREMENTS – SEE PAGE 4 FOR SPECIFIC COURSES

General Education Category	Course #	Credits	Grade	Semester	Equivalent
Category I: Writing (6 cr.)	ENGL 150	3			
Category II: Oral Skills (3 cr.)					
Category III: Mathematics (4 cr.) <i>MATH 112 or STAT 241 – Math Requirements</i>					
Category IV: Natural Sciences (7 cr.) (1 life science/1 physical science/1 lab) <i>BIOL 178/188 and CHEM 115 – Biology Major Requirements</i>					
Category V: Social Sciences (6 cr.) (2 courses from separate prefixes) <i>EDF 100 – Education Core Requirement</i>					
Category VI: History (3 cr.)					
Category VII: Cultural Diversity (3 cr.)					
Category VIII: Fine Arts (3 cr.)					
Category IX: Integrated Humanities (3 cr.)					

Students should consult with their advisors to determine if specific courses are necessary in order to satisfy the General Education requirements within this program.

Certain courses in this program have prerequisites; students should check the course descriptions for required prerequisites.

CATEGORY I: WRITING			6
ENGL 150	College Composition		3
ENGL 210	Technical Writing		3
ENGL 226	Research Writing		3
ENGL 301	Business Communication		3
CTCM 202	Business Communication		3
CTCM 203	Technical Communication		3

CATEGORY II: ORAL SKILLS			3
COMT 101	Fundamentals of Communication		3
COMT 110	Interpersonal Communication		3
COMT 130	Introduction to Public Speaking		3

CATEGORY III: MATHEMATICS			3
MATH 106	College Algebra		3
MATH 107	Precalculus		5
MATH 112	Calculus I		4
MATH 121	Finite Mathematics		4
MATH 141	Contemporary Mathematics		3
STAT 141	Introduction to Statistics		3
STAT 241	Statistical Methods		4

CATEGORY IV: NATURAL SCIENCE			7
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Students are required to take one course from each subcategory and at least one lab or SCIN 101, 102 & 103

Subcategory A – Life Sciences

BIOL 101	Survey of Biology		3
BIOL 115	Survey of Biology Lab		1
BIOL 178	Principles of Biology		3
BIOL 188	Principles of Biology Lab		1

Subcategory B – Physical Sciences

CHEM 104	Fund of General & Organic Chemistry		3
CHEM 105	Fund of General & Organic Chem Lab		1
CHEM 115	General Chemistry I		3
CHEM 118	General Chemistry I Lab		1
EASC 100	Lithosphere and Hydrosphere		3
EASC 101	Lithosphere and Hydrosphere Lab		1
EASC 120	Historical Geology & Paleontology		3
EASC 121	Hist Geology & Paleontology Lab		1
GEOG 100	Physical Geography Lab		1
GEOG 101	Physical Geography		3
PHYS 101	Earth, Air, Fire and Water		3
PHYS 102	Earth, Air, Fire and Water Lab		1
PHYS 110	College Physics I		3
PHYS 111	College Physics I Lab		1
PHYS 201	Introduction to Astronomy		3
PHYS 203	Introduction to Astronomy Lab		1
SCIN 101, 102, 103	Integrated Science I, II, III		3, 1, 3

CATEGORY V: SOCIAL SCIENCE			6
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EDF 100 Educ Persons for a Democratic Society 3
and one of the following:

ECON 200	Principles of Microeconomics		3
ECON 201	Principles of Macroeconomics		3
POLS 101	Introduction to Government		3
POLS 212	United States Government		3
PSYC 101	General Psychology		3
SOCL 101	Introduction to Sociology		3
SOCL 212	Physical Anthropology & Archeology		3
SOCL 221	Social Problems		3

CATEGORY VI: HISTORY			3
HIST 204	United States History to 1877		3
<i>or</i>			
HIST 205	United States History Since 1877		3

CATEGORY VII: CULTURAL DIVERSITY			3
NAMS 181	Intro to Native American Studies		3
NAMS 211	Social Issues of the Native American		3

CATEGORY VIII: FINE ARTS			3
ART 101	Fundamentals of Art for Elem Teach		2
ART 110	Art Studio Essentials for Non-Art Majors		3
ART 142	Introduction to Pottery		3
ART 161	Introduction to Drawing		3
COMT 150	Introduction to Theater		3
COMT 155	Global Cinema		3
COMT 250	Introduction to Acting		3
ENGL 160	Reading and Responding to Literature		3
ENGL 204	Fundamentals of Creative Writing		3
ENGL 280	Fiction into Film		3
MUSC 100	Music Appreciation		3
MUSC 160/360	Symphonic Band		1
MUSC 162/362	Concert Choir		1
MUSC 168/368	Jazz Ensemble		1
PHIL 303	Classical Mythology		3
CTDR 248	CAD Presentations		3

CATEGORY IX: INTEGRATED HUMANITIES			3
ART 132	Art History Survey		3
ENGL 260	World Foundations of Literature		3
HON 181	The Ancient and Medieval Worlds		3
HON 182	The Renaissance and Modern Worlds		3
MUSC 340	Music History to 1750		3
MUSC 341	Music History 1750 to the Present		3
PHIL 107	Philosophical Inquiry		3
PHIL 115	Ethics		3
PHIL 117	Philosophies of Life		3
PHIL/ENGL 240	The Bible as Literature		3
PHIL 250	Christianity		3
PHIL 301	Death, Dying, and Medical Ethics		3
PHIL 311	Environmental Ethics		3
PHIL 314	Business Ethics		3

		Course	Credits	Grade	Semester	Equivalent
Professional Education Core						
*EDF	100	Educated Persons for a Democratic Society	3			
EDF	225	Human Development in Education	3			
EDF	250	Educational Psychology	3			
SPED	260	Introduction to Teaching Exceptional Learners	3			
HHP	201	Core Concepts in Health	3			
RD	310	Reading and Writing Across the Curriculum	3			
EDCI	310	Teaching in the Middle and Secondary Schools	3			
EDCI	314	Teaching Science in Middle & Secondary Schools	3			
EDF	450	Philosophical, Legal & Ethical Issues in Education	3			
EDUC	486	Student Teaching	9			

Biology Requirements

*BIOL	178	Principles of Biology	3			
*BIOL	188	Principles of Biology Lab	1			
BIOL	179	Biodiversity	3			
BIOL	189	Biodiversity Lab	1			
BIOL	263	Introduction to Cell Biology	3			
BIOL	273	Introduction to Cell Biology Lab	1			
BIOL	353	Genetics	3			
BIOL	354	Genetics Lab	1			
BIOL	355	Ecology and Evolution	3			
BIOL	356	Ecology and Evolution Lab	1			
BIOL	490	Internship	1			
BIOL	498	Capstone Seminar	1			
Biology electives selected in consultation with an advisor to include upper division course work from each of the following areas: Botany, Zoology, Microbiology, and Molecular Biology.			15			

Chemistry Requirements

*CHEM	115	General Chemistry I	3			
CHEM	118	General Chemistry I Lab	1			
CHEM	116	General Chemistry II	3			
CHEM	119	General Chemistry II Lab	1			
CHEM	220	Principles of Organic Chemistry	3			
CHEM	221	Principles of Organic Chemistry Lab	1			

CHEM	320	Quantitative Chemical Analysis	3			
CHEM	325	Quantitative Chemical Analysis Lab	1			
CHEM	361	Biochemistry	3			
CHEM	371	Biochemistry Lab	1			

Students wishing to obtain a minor in Chemistry will need to take CHEM 330, 331, 334 and 335 instead of CHEM 220 and 221.

Mathematics or Statistics Requirement (choose two of the following, one from each prefix)

*MATH	112	Calculus I	4			
MATH	113	Calculus II	4			
*STAT	141	Introduction to Statistics	3			
STAT	241	Statistical Methods	4			
STAT	242	Statistical Methods II	4			

Physics Requirement (Choose one Physics course with lab)

PHYS	110	College Physics I	3			
PHYS	111	College Physics I Lab	1			
PHYS	210	University Physics I	3			
PHYS	211	University Physics I Lab	1			

Electives

*This course may meet General Education requirements. Students should consult with an academic advisor before registering for courses in order to minimize the number of credits required for graduation.

BACHELOR OF SCIENCE DEGREE IN BIOLOGY – TEACHING CERTIFICATE OPTION

Categories	Credits	Earned
General Education	37	_____
Professional Education Core	33-36	_____
Biology Major	33-37	_____
Chemistry/Mathematics/Physics	24-32	_____
Electives (variable)	V	_____
Total	128	_____

A minimum of 36 credits must be upper division classes (300 and above).

NOTES: